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Forest and Field.

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Advice For Young Collectors.

I have a few words that I would like to say to the young collector who goes about taking the eggs and destroying the nests of our feathered friends, and who gets a collection in the spring, to be broken in the fall and commenced again the next spring.

Don't do it! If you want a collection of bird's eggs you can get one without taking every nest of eggs you find for trading stock.

Wait until the bird has laid its full complement and then take one. If you want trading stock go out in the early spring and get hawks' and crows' eggs and the eggs of birds that do more harm than good, but *don't* take robin's, phoebe's and "ground-bird's" eggs for that purpose. If you don't know where to look for the eggs of the larger birds, procure books and study up on them. You can get "Davie's Nests and Eggs of North American Birds" for \$1.25 and Maynard's "Eggs of North American Birds" for \$1.50.

Get a good outfit and go into the business in earnest. You will want an egg drill, a blow-pipe and an embryo-hook for blowing your eggs, a pair of climbing irons and a tin collecting can filled with cotton. Of course there are other articles that may be convenient and useful, but these are all that are necessary for the field. You may procure them of any dealer in naturalists' supplies. Climbing irons that will answer for almost any tree in this section may be made out of a piece of tire steel bent into the shape of a letter J and with the shorter side bent downwards again and sharpened into one point. Loops may be riveted into the longer side for the straps, which should be strong. For a collecting can a long tin box such as druggists keep porous plasters in is just the thing. Make a hole each side of the seam near the top and pass a string through it, so that it may be slung over the shoulder.

When you find a nest do not touch the eggs until you find out what the bird is. Make full data for each egg, telling where the nest was situated, what it was made of, what the dimensions were and any other points which are of interest. Blow the eggs cleanly through as small a hole in the side as you possibly can, and rinse them out by blowing them full of water through your blowpipe and blowing the

water out. It is not necessary to put the end of the blowpipe in the hole to empty the egg, but just hold it near the side of the hole.

Learn all you can about the habits of the birds and you will soon find yourself their friend and not their enemy.

Open up correspondence with collectors in other states and you can trade and get a collection that will be the envy of your acquaintances, and one that will be of value to you. If you find anything that you think of interest to ornithologists, write it up and send it to some naturalist's paper, where they may read it.

For a tray to keep your eggs in take some half-inch pine, such as you may get in dry goods boxes, and make a box about 16 inches long, 11 inches wide and 2 inches deep at one end and 3 4 of an in. deep at the other, inside measure, allowing the sides to slant toward the lower end. Then partition it off, with a row of big boxes at the deeper end and so on down towards the other end. Partially fill these boxes with sifted sawdust and you will have a suitable box for single eggs, which all young collectors should get until they begin to know the value of them.

This case may be kept in a box 18x12x3 inches inside measure.

For studying the habits of birds and assisting in identifying them, a good field-glass will be very useful, making it scarcely ever necessary to use a gun and thus destroying our feathered friends for the benefit of "science." This may be necessary to the absolute identification of some birds, but to a beginner the naked eye or a field-glass is sufficient.

Field Sparrow.

(*Spizella pusilla*)

This is another of our small boy's "ground-birds", although it sometimes nests in small bushes and trees. It may be distinguished from the Song Sparrow by its almost forked tail and by the absence of spots on the under side.

It begins nesting in this state about the middle of April, and deposits from four to five bluish-white eggs, spotted and blotched with reddish brown and lilac. The nest is composed of fine grass and weeds and is lined with grass and horse-hair. It usually measures inside about 2 x 1 1-2 inches. The eggs usually measure about .65 x .50.

The Red-tailed Hawk.

(*Buteo borealis*.)

My first experience with this bird was in April, a few summers ago. I was walking through a small piece of woods in search of nests of the Ruffed Grouse (*Bonasa umbellus*) when suddenly glancing upward I discovered a large hawk in the act of rising from the nest. I soon climbed the tree and looking over the edge of the nest I saw two young hawks, a dead crow, a mouse and a gray squirrel, the last of which was recently killed and probably brought there a short time before I made my appearance. I took one of the young birds home and kept it about eight months when it was killed by a stray dog.

My next nest was shown me by a friend who could not climb the tree. It was in a large hard maple about two and one-half feet in diameter and sixty feet high.

After removing the sap buckets from the foot of the tree I started to climb to the nest. When about one third of the way up the ankle strap on my left climber gave way and I finished the climb with only one iron. On arriving at the nest I found one whole and one broken egg. These were of a bluish white wholly unspotted, the one and only case which ever came under my notice. The nest was a monstrous affair built of sticks, some of which were an inch and half through, and lined with lichens and the moss such as grows on forest trees. It was very flat and measured 21-2 feet across and three feet in depth. After securing the one unbroken egg I descended the tree. My companion shot the female bird for identification. The measurements were, as near as I can remember, as follows: length, 22 in.; stretch of wing, 27 in. Later the same day I discovered two more nests of the same species, one in a maple 35 feet from the ground, and one in a beech about 65 feet from the ground. The first contained a handsomely marked set of three eggs, which were perfectly fresh. The parent bird was very pugnacious and kept attacking me all the way up the tree.

The other nest contained a set of two sparingly marked eggs which were fresh and two recently killed mice. On seeing me the bird immediately left the nest and flew off.

Later I found two more nests of *Buteo borealis* in the same wood, one containing one and the other two eggs.

In only one instance have I found this hawk nesting on low ground.

One day as I and my companion of a former trip were in search of crow's eggs, in a large hemlock swamp, we had occasion to cross a stream that emptied into a large creek. We heard a hawk squealing, and looking about among the trees we saw the nest in a leaning yellow birch in the center of the stream. After some

little time we got in range and my companion shot at the bird on the nest but with no apparent effect whatever. With great difficulty we crossed the intervening space on fallen tree trunks. When we got to the foot of the tree the hawk flew off and lit on a dead tree which stood some distance away on the edge of the stream. We climbed the tree and found the nest contained a set of four badly incubated eggs. We tried to blow one but were unsuccessful, and returned the others to the nest. Three days later we visited and found the eggs had hatched.

The measurements of the eight sets I collected last spring will average about 2 16 x 1,76 inches.

American Crow.

(*Corvus Americanus*.)

Although this is quite a common bird in the eastern part of the United States, especially in New York State, I will say a few words about it for the benefit of the young collector.

This bird may be found in this State at any time of the year, but it is not very common in the winter months. They begin building their nests about the first of April and fresh eggs may be found from the middle of April to the last of May. Their nests are usually easy of access, being scarcely ever over 30 feet from the ground. They are usually situated in beech or maple trees but I have seen them in tall hemlocks fully fifty feet from the ground and in scrub pines and apple trees scarcely ten feet from the ground. They are generally placed next to the body of the tree, and are composed of small sticks and lined with strips of birch bark.

They lay from four to seven eggs, which vary greatly in color and the number of spots, some of them being spotted very sparsely, while in others it is impossible to see the ground color.

In the fall this bird congregates in great colonies at nightfall when they go to roost.

The first crow's nest I found was in a small ash tree about thirty-five feet from the ground, situated in the center of a small swamp. I had to wade in water up to my knees to get to the tree. There were three eggs in it the first time and two the second time I visited it. If the nest is robbed they will usually lay a second time. Nest No. 1 of 1891 was situated in a beech tree about twenty-five feet from the ground in a small scattering wood. The dimensions of this nest were: Outside diameter 23 in., inside diameter 7 1-2 in., depth, outside, 18 in., inside 4 1-2. April 12 I found five unincubated eggs in this nest, which measured as follows: 1.67 x 1.24, 1.65 x 1.22, 1.69 x 1.21, 1.70 x 1.23, 1.70 x 1.20.

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Song Sparrow.

(Melospiza fasciata.)

This bird, owing to the wide variety of its nesting habits and the diversity in the coloring of its eggs, is the original of most of the different species of "ground-bird's" eggs in the small boy's collection. It begins building about the middle of April in New York state and fresh eggs may be found from that time until the last of July. It nests on the ground or in low bushes and trees but a few feet from the ground, constructing its nest chiefly of grass and lining with finer grass. It lays from 4 to 5 eggs, 4 being the usual complement. They vary greatly in coloration, some being completely covered with spots and others being spotted very sparsely. The spots are usually more numerous near the larger end, sometimes forming a ring around that end. It may be readily recognized when it flies up by the shape of its tail, which is rounded and with the outer two feathers somewhat shorter than the rest.

The following description of its nest is taken from one which I am sitting beside while writing this article. It is situated at the foot of a willow tree and is completely overhung by long grass and sticks. It is composed of large grass stems neatly interwoven and lined with finer grass. It measures, inside 2 1-2 x 1 1-2 inches and contains four eggs, of a pinkish green ground color, with the larger end nearly covered with blotches of a dark reddish-brown and the rest of the egg more or less spotted with a lighter shade of the same color. My first nest of 1891 was found on May 24.

American Sparrow Hawk.

No. 360. *Falco sparverius*, LINN.

About the first of July, 1888, while stawberriying with a friend, I noticed what I thought to be a woodpecker's nest. It was situated about thirty-five feet from the ground in a butternut stub, by the side of a creek, under a limb. I climbed up to it and reached in, when I found that it contained five young birds, which turned out to be Sparrow Hawks (*Falco sparverius*). They were but a few days old.

I took them home and put them in the loft of a barn. I fed them scraps of meat and fish, which they ate greedily, never seeming to be satisfied. One of them got out of the barn in a few days and met an untimely end in the henyard, but I kept the rest until they were full grown. They were not afraid of anybody, but I could not tame them so they would recognise me. They would raise the crown feathers and draw back the head and utter an odd rattling cry whenever anybody tried to touch them. When full grown I let them fly away.

Another "Ground Bird."

The Vesper Sparrow, (*Pooecetes gramineus*) is found in Eastern North America quite commonly, nesting in May and June.

The following describes a nest and bird taken June 4, 1892:—

The nest is composed of grass stems finely woven together, and is lined on the bottom with hair. It measures two and one-half inches in diameter by one and three-fourths of an inch in depth, inside. There were four eggs in the nest, with incubation rather advanced. They were of a pale greenish color, spotted and blotched rather obscurely with brown and with a few lines of umber on them.

The bird was a female, length five and one-half inches, length of wing, three inches. The white feathers on the tail were partially broken so that they did not show when she flew away from the nest. The color of the breast was a soiled white with dusky spots on the forward part and along the flanks. The tail was notched. The bird flew along the ground for a little ways and then lit on a weed, as we approached the nest. Not being able to determine what she was with certainty we shot and skinned her.

Belted Kingfisher

(Ceryle Alcyon)

What fisherman does not know this bird with its peculiar rattling cry and its habit of flying up and down the streams? It may be found from April 15 to the last of October in New York, beginning its nest about the first of May. Its nest is simply a tunnel from 3 to 5 feet long extending horizontally into a high bank of a stream or a sand bank, the end hollowed out for a place for the eggs. There is usually a quantity of fish bones and scales found in the nest, and in one nest the eggs were laid on beech leaves. They lay from 6 to 8 white eggs, which average about 1.37x1.07.

The first nest I ever found was in a gravel bank, side of a small stream, about a foot from the top and running back about four feet. I took a spade and dug about two feet of the tunnel out and then reached my hand in to see if there was anybody at home. I was somewhat surprised to find that there was. The female bird grasped my finger in her bill so tightly that I pulled her off the nest by it, breaking two of the eight eggs. The remaining six eggs, which I have in my collection, measured about 1.48x1.08. This nest contained nothing whatever but the eggs.

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NUMBER ONE.

THE FOREST AND FIELD is presented to the collecting fraternity with the hope that it may meet with favor from all. We have come to stay and shall do our best to make this one of the most interesting collecting journals in the country, and one that will compare favorably with all. It will be especially devoted to Ornithology, Oology, and Entomology. It will be issued on the first Monday of every month and will be of the same size and style as the present issue.

The subscription price, twenty-five cents per year, is very reasonable and will not inconvenience anyone who desires to subscribe.

INTERESTING articles pertaining to any branch of natural history will be gratefully received, and inserted in this paper. To any person sending us an article on Ornithology, Oology or Entomology we will give a five line notice in our exchange column.

To all persons sending us 25 cents for a year's subscription to FOREST AND FIELD we will give a five line notice in our exchange column.

EXCHANGE notices, for sales, or wants will be inserted in our regular column on Page 8 at the rate of ten cents for the first line and two cents for each subsequent line, nine words to be counted as a line.

AS this number has been prepared in somewhat of a hurry and under difficulties the quality of the matter may not be of especial value to experienced collectors, but we will endeavor to improve in that direction in subsequent issues.

Subscribe, and send us an article on your past collecting experiences, whether it be good, bad or indifferent.

W. H. OLNEY, of Poland, Ohio, has a very interesting article on "Woodpeckers" in the May Oologist giving a very instructive description of Picidae of his locality. The Oologist has recently been improved by being printed on better paper and with an engraving for a frontis piece. Mr. Lattin now gives us one of the best oological papers in North America.

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AFTER you have looked over this copy, if you don't care to subscribe hand it to some of your friends who are interested in such things, and if you do want to subscribe, get others to subscribe, and thus help along a good cause.

If the articles in this issue do not suit you, do not throw away the paper, but send us an article, that we may know what does suit you. We wish to make this paper an interesting one to collectors generally, and we can't do so unless they let us know what they want.

An Albino Robin.

One day in the spring of '89 as my cousin and I were wandering about the meadows, we noticed a large flock of robins with a white bird among them. We thought the bird a pigeon at first, but as we got nearer it the more it looked like a robin. The color above was a pure white; the breast was a very light pink. After that it was seen very often and became very tame. It mated with a common robin and they built a nest in a hemlock tree standing near the water. The female laid a set of four eggs, which were indistinguishable from any other Robins' eggs. After they had set a week the eggs suddenly disappeared, and I never could find out who or what took them. The bird, however, stayed with us until late in the fall. The next spring it returned, but did not nest again, to my knowledge. Last spring I did not see it, though it was reported to have been seen at a town about fourteen miles distant. I have heard of a great many kinds of albinos; swallows, blackbirds, crows, meadowlarks, etc., but that was the only one that ever came under my individual notice.

We should like to exchange Natural History specimens with reliable persons. Write for terms, POPE & KELLOGG, Gilbertsville, N. Y.

A Nest of the Hairy Woodpecker.*(Dryobates villosus)*

On May 17, 1891, while walking along a large stream, I came to a small grove of half dead beech trees which had been pecked full of holes by the woodpeckers. Thinking that possibly there might be some of them still occupied I rapped on several of the trees without success. At last I came to one that showed signs of life, for a Hairy Woodpecker flew out and began rapping on an adjacent tree. It was impossible for me to get at the nest as I did not have a saw and the tree was too hard to use a knife on. So in the afternoon I took a saw, my climbing irons and a collecting can and visited it again. The birds did not seem to be the least bit shy for they stayed on the next tree all the time I was engaged in sawing off the top of the dead tree. After a fourth of an hour's sawing I found that I could break the remaining wood and on doing so disclosed a set of five glossy white eggs, which on blowing proved to be fresh. This set of eggs I think were rather smaller than the average. They measured about .61x.68.

Chickadee.*(Parus atricapillus.)*

My experience with this bird has been rather limited, but I will give a description of some of the nests I have found in my rambles. My first nest was in an apple-tree and contained seven young birds nearly full grown. It was in a dead limb about ten feet from the ground. The cavity was about six inches deep and the entrance two inches in diameter. It rather surprised me to find so many in one small hole, but they must have been packed pretty close together. The nest was composed of moss and hair.

Another nest was found May 28, 1892 by a boy's laying violent hands on a small alder stub about three feet high. The stub was so rotten that he pulled it to pieces and found the female bird on the nest, which was about one foot from the top. The nest contained six fresh eggs.

The stub was about 4 1-2 inches in diameter. The cavity was about six inches deep and the nest was made of cow's hair with a few feathers. The old bird was taken home and put in a cage and kept for a few hours. It appeared very tame and commenced singing before it was released.

These birds are very common at all times of the year, and usually congregate in small flocks, appearing very busily engaged in pursuit of food, but finding time to utter their "Chic-a-dee-dee" every few minutes.

Catbird.*(Galeoscoptes carolinensis)*

This bird is one of the most common birds of New York state, and is found in nearly the whole of the United States east of the Rocky Mountains. It is of a deep slate color, with black crown and tail, and is about nine inches in length. It builds its nest in places where bushes grow thickly, a patch of bushes on the steep bank of a river being a favorite location. The nest is rather a bulky structure of dry twigs, leaves and grass, lined with roots. It gets its name from its peculiar cry, which sounds something like a cat, but it has a song of its own, besides being a mocker of no mean ability. It begins building about the middle of May, laying from four to six eggs, of a peculiar dark greenish-blue color, and which measure about .95 x .71

Bank Swallow.*(Clivicola riparia.)*

This bird is found nesting in tunnels in perpendicular sand banks, sometimes large numbers congregating in one bank, which is completely honey-combed with holes. It sometimes builds in the sand "cuts" on a railroad. The bird is seen flying around over the creeks for insects, after the manner of swallows generally and may be known by the white breast with a narrow dark band across it. The tail is slightly forked.

Its tunnel extends back from two to five feet, and the nest is composed of grass and feathers, upon which from four to seven pearly-white eggs are laid, which measure about .71 x .50.

Some More Young Birds.

On Sunday, May 27, 1892, as a friend and myself were walking through a swamp we saw what appeared to be the deserted habitation of a crow, but upon seeing an owl fly off we decided to visit it the next day. So, taking a pair of climbing-irons and a gun, we went there. The nest was about thirty-five feet from the ground in a hemlock tree. My friend shot at one of the owls, which was perched on a limb above the nest, but he managed to get away. As I was climbing the tree, the other owl made his appearance, and was shot. It proved to be the Long-eared Owl.

The nest was an old crow's nest and was nearly flat on top. It contained five young birds of different ages, the oldest about a month old, and the youngest about a week. We carried them home and put them in a box, and shall endeavor to raise them, to study ornithology a new way. They look to be about twice as big as they usually are, as they puff up their feathers and make themselves look like a ball. They make a noise when anyone approaches them, by snapping their bills. We feed them on fish and frogs.

A Collecting Trip.

One bright sunshiny morning in June I and a comrade went bird-nesting in a second growth swamp, close by where we live. We did not have much success until about noon, when we spied a bunch of twigs in a pin-cherry tree. My friend shook the tree and six elliptical green eggs rolled out and fell to the ground. They were all broken, of course, but we did not despair, for we thought there might be other nests in the swamp. So we continued on towards the cove, keeping a bright look-out for nests of a similar character. We soon saw scores of Green Herons flying about ahead, uttering their guttural squawk. We hurried on and were soon in the midst of a veritable heronry, with nests all about, sometimes two or three in one tree, one above another. We could see several families of young herons craning their long naked necks over the edge of the nests. We climbed several trees and secured six unincubated sets and could have gotten many more, if we had desired, but we are not egg-hogs by any means. We counted upwards of one hundred nests in the surrounding trees.

We started away in search of a quiet place to eat our lunch, and as we were walking along a fallen tree a Ruffed Grouse whirled out from under our feet, causing us to jump several feet in the air. On looking under the log we discovered the nest, containing eleven eggs, but incubation was so far advanced that we did not take the eggs. After eating our lunch, we looked about some more, but had no more luck, so we started for home, following a ridge of land. Soon we discovered a hole in a steep bank, which looked as though it might be inhabited by a Belted Kingfisher. After cutting a long stick and measuring the depth of the hole we began to dig down to the nest. When we broke through there was a rush of wings and an old Kingfisher flew out and alighted on a tree some distance off on the bank of the creek. We found six pearly white eggs in the little chamber excavated at the end of the tunnel. They were laid on fish-bones and castings of the old birds. After having secured the eggs, we started for home with full collecting boxes, just as the sun was setting. L.

The Cedar Bird.

(*Ampelis cedrorum*.)

This is a bird peculiar in its nesting time, as it builds its nest along in the latter part of July and August. The nest is placed in small cedars and in orchard trees and is usually six to eight feet from the ground. It is composed of bark and small twigs and almost everything suitable for a nest, and is lined with horsehair and finer material.

The bird lays from three to five eggs of a slate color, spotted with dark brown and purple spots, almost black. The eggs measure about .85x.60.

The bird is usually found in small flocks and is a familiar bird. It is of an olive color passing to yellow below, and is about seven inches long,

BOTANY.

COLLECTING AND MOUNTING FLOWERS.

Flowers are found everywhere, and there are many species, all of interest to the collector. Some of the plainer species will sometimes furnish more food for study than the more showy kinds will. This is not a very difficult study, although it takes more time to prepare the specimens than other kinds of collecting does.

All the apparatus that is needed is a press, a collecting box, and an old butcher knife for digging roots and bulbs. The following describes a very convenient press for drying specimens: Take two boards about two feet long by fifteen inches wide. In each end of one board dovetail a post about eight inches high by three inches wide and an inch thick. In the ends of the other board make grooves so that it may slide up and down between the posts. In the top of each post make a hole to pass a rod through from one to the other. This rod may be of wood or of metal. Then make two pair of wedges to fit under this rod, crossways of the press. To use this press place twenty or thirty thicknesses of old newspapers on the bottom board, then place your plant in a folded sheet of common tea paper and place it on top of the other paper. Then put about twenty thicknesses of newspaper and another plant, and so on until you have put all you have in the press. Then place the top board in, put in the rod, put the wedges between the board and press them together as much as possible.

The plant should be well cleaned and spread out on the tea paper, and if the leaves overlay each other, there should be a small piece of paper between them, and with large flowers between the petals. If it is a fleshy root or a bulb, it should be sliced off with a sharp knife. The newspapers should be changed every morning, and those taken out should be thoroughly dried before being put in again; but the flowers should not be taken out of the tea, or manilla, paper until ready for mounting, which usually is in about two weeks from the time of being first put in the press.

The plants should be mounted on cardboard, the sheets being of a uniform size. Pieces of court plaster may be used to fasten them to the board. The order, family, genus, specific and common names should be written on the card in a neat hand, and the species of the different genera should be kept together. A sheet of heavy manilla paper folded to a trifle larger size than the sheets of cardboard will serve as an envelope for each genus.

When you go out on a collecting trip almost any kind of a box or basket may be used to carry the flowers in, but a tight tin box or a leather book made to fasten with a strap and which will hold moisture is the best. Take the whole plant if it is not too big, and search for the rarer plants. You will soon find that there are a great many more flowers in your vicinity than you ever dreamed of and which are exceedingly beautiful.

ENTOMOLOGY.

The Fish Killer.

(Benacus haldemanum.)

The fish killer belongs to the order Hemiptera, and to the family Belostomidae. The following remarks refer to the *Belostoma haldemanum* of Leidy, now placed in the genus *Benacus* by some authors. It measures from three to three and one-half inches in length. Its general color is dull brown, with a yellowish-white band between the eyes, extending upon the thorax, where it becomes less marked. The eyes are large and black. The body beneath is longitudinally marked with dark brown and dull yellow bands. The fore legs are powerful, without a groove in the femur, and each terminates in a single claw. It is with these raptorial legs that they seize their prey. The remaining four legs are each armed with two hooked claws. The posterior pair of legs are broad and flattened, fringed with hair, and are used as paddles or oars to propel the insect through the water. It is furnished with strong wings and can fly well. Its beak is armed with a cutting or boring apparatus at its tip, by means of which it can easily penetrate the tissues of the animal upon which it feeds. It possesses large salivary glands, which doubtless secrete a poisonous saliva, for I have repeatedly noticed that a small animal ceases to struggle and is apparently dead almost instantly after the beak has entered its body. It feeds entirely by suction through the beak upon the blood and fluids of its prey. A peculiarity of these bugs is that they breathe through their tails, or draw in the air through the tip of the abdomen. They are generally found during the day on the under side of floating bark, dead wood, or other debris, completely submerged with the exception of the two little tails or setae and the tip of the abdomen which are kept above the surface of the water. Sometimes a large amount of air is drawn in and held in the form of flattened bubbles between the wings and body, which fit closely together, and I presume they use this air for breathing purposes when they remain beneath the water for any length of time. In the aquarium I have noticed them to remain under water for over thirty minutes at a time.

They seemed to prefer the quiet water of brooks and ponds, where small fishes and tadpoles are abundant. When food becomes scarce and the water low, they migrate during the night to other bodies of water. They generally capture their prey at twilight or in the night; at least, such has proved the case when in captivity.

I am confident that to be pierced by the beak of a fish killer would cause a painful wound. At one time when one of them was about to crawl out of the aquarium I brushed it back with my finger, which it instantly seized with its fore legs, no doubt mistaking it for some thing to eat; and although I pushed it off immediately, and am quite certain its beak did not touch my finger, yet I experienced a tingling sen-

sation in the finger, followed by a semi-numbness which lasted for five or six hours. The scratch of its claws alone must have produced this, yet I could observe no marks whatever.

The following notes on the habits of the fish killer I take from my journal:

May 22, 1887.—Placed a large diving beetle (*Dytiscus*) in an aquarium containing a *Benacus haldemanum*. I observed that when I dropped the beetle in and it began swimming about, the fish killer crept under a large stone, as if to hide. An hour later, when I looked into the aquarium, *Benacus* was on top of the stone, beneath the water, with the unfortunate *Dytiscus* firmly held in his raptorial fore legs, and his beak thrust deeply in the body of the beetle, between thorax and abdomen, on the under side. Of course the beetle was limp and dead. In two hours or more, after he had sucked all the blood and fluids from the beetle, he discarded the remains. I found that the thorax and abdomen of the beetle were held together by merely a few shreds. The connecting tissue of the suture must have been separated by numerous punctures of the powerful beak, or softened by the saliva, which is copiously exuded.

June 1.—Two goldfishes were added to the aquarium containing the fish killer. One fish $3\frac{1}{2}$ inches in length, and the other nearly four. On the same evening, about 7 o'clock, the *Benacus* darted at and seized the smaller of the fishes, but it struggled and dashed the bug off in an instant. On June 2 another fish killer was put in the aquarium.

Saturday, June 4.—At 7:10 p. m. I visited the aquarium and found both of the fish killers resting quietly on the under side of a floating block, with nothing but their breathing tubes above the surface of the water. At 7:30 I again took a look at the aquarium. Something startling had happened. The larger *Benacus*, the one first captured, was still clinging to the under surface of the block, but in the deadly grasp of his fore legs he tightly held one of the gold-fishes. There was no motion discernible in any part of the fish, it was dead to all outward appearances. The beak of the fish killer was inserted in the fish near the base of the anal fin, and *Benacus* was sucking in a vigorous and contented manner. At 12:15 p. m. the fish killer was still clasping the fish, which had now become as limp as a rag, the head hung over until it touched the tail. The beak of the fish killer was inserted near the gills of the fish, and the belly had been pierced and probed for blood and fluids at about every eighth of an inch from the vent to beneath the gills. In the morning the dead gold fish was floating on the water. It was much collapsed, and somewhat discolored along the abdomen. The fish killers were still on the floating block.—(C. Few Siess, in Scientific American.)

Giles S. Champlin, who resides at Blenheim, Schoharie county, says that within two weeks, hawks in his vicinity have robbed him of eighty-five chickens. Some of the chickens weighed 6, two and two and one-half pounds,

Collecting Butterflies and Moths.

This is a field for the young collector that is both interesting, amusing and instructive, although it is attended with many more troubles and difficulties than birds egg collecting. The wings are covered with fine scales that rub off at the least touch of the fingers, thus mutilating the specimen, but if care is used not to touch the wings, they may be preserved. The advantages however will offset these difficulties, as these specimens are much more abundant than eggs, and may be found anywhere.

The best outfit we have used consists of a light net about fifteen inches in diameter, made of muslin, a cigar box lined with sheet cork, some insect pins, a bottle of benzine and a small glass dropping tube. The insects may be killed by dropping a little benzine on their head or abdomen while in the net, and they may be pinned without being touched by the hands at all. They should be removed from the net and pinned firmly in the box.

Ordinary cigar boxes lined with cork do very well to keep them in, if you have a sufficient quantity of naphthaline cones, or ordinary "moth balls" to prevent the ravages of museum pests. A pin may be heated and the head stuck in a ball so that it may be pinned to the cork like the insects.

The best method of procuring Lepidoptera is to secure the larvæ and pupæ or chrysalides, which may be found on their food trees or under boards and stones, or on fences, and, in fact, almost everywhere. When you capture a caterpillar you should secure some of the plant on which it is feeding, for they will only eat that kind of plant. Packard gives the following as a good cage to keep them in—

The pupæ may be kept in a box sufficiently large for them to expand fully and with the ends made of wire netting, and the cover of glass. Records should be kept of the time of transformation of the insect, when found, etc.

It comprises three distinct parts: 1st, the bottom board, consisting of a square piece of inch-thick walnut with a rectangular zinc pan four inches deep, fastened to it, above, and with two cross-pieces below, to prevent cracking or warping, facilitate lifting, and allow the air to pass underneath the cage. 2d, a box with three glass sides and a glass door in front, to fit over the zinc pan. 3d, a cap, which fits closely on to the box, and has a top of fine wire gauze. To the center of the zinc pan is soldered a zinc tube just large enough to contain an ordinary quinine bottle. The zinc pan is filled with clean sifted earth or sand, and the quinine bottle is for the reception of the food plant. The cage admits of transformation light and air, and also of the easy removal of the excrement and frass which fall to the ground; while the insects in transforming enter the ground or attach themselves to the sides or the cap, according to their habits. The most convenient dimensions I find to be twelve inches square and eighteen inches high: the cap and the door

fit closely by means of rabbets, and the former has a depth of about four inches to admit of the largest cocoon being spun in it without touching the box on which it rests. The zinc pan might be made six or eight inches deep, and the lower half filled with sand so as to keep the whole moist for a greater length of time.

Make a thorough study of this collecting and you will find more pleasure in it than in egg collecting and with no danger of doing harm.

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